

## PATENT ABSTRACTS OF JAPAN

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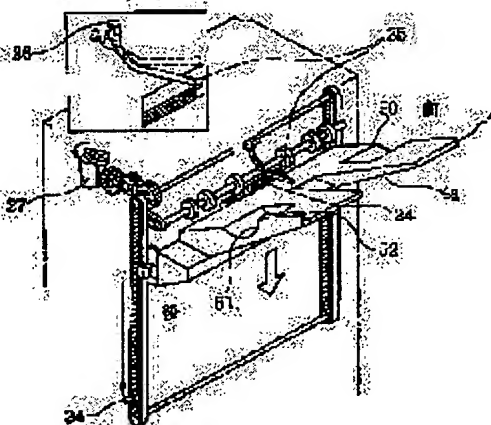
ANDO AKITO

## (54) PAPER POST-PROCESSING DEVICE

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a paper post-processing device which has a paper delivery tray provided with a paper-taking recess part at its front edge end designed to be able to effectively prevent the recess part from hindering the output of paper.

**SOLUTION:** In a paper post-processing device A which delivers paper to a paper delivery tray 4 after receiving the paper delivered from an image forming device and then post-processing it as necessary, a fence 52 approximately parallel to a paper delivery direction for the paper delivery tray 4 is provided along the rear edge of the paper delivery tray 4, the front and rear edges of the paper delivery tray 4 being approximately parallel to the paper delivery direction. A force 52 may be provided to protrude along the rear edge of the paper delivery tray.



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**CLAIMS**

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[Claim(s)]

[Claim 1] a form eject direction [ on the BTS discharged to a delivery tray after receiving the form discharged from image formation equipment and performing after treatment if needed, and as opposed to the above-mentioned delivery tray ], and abbreviation -- the back end edge among the parallel delivery tray order edges -- meeting -- the form delivery direction and abbreviation -- the BTS characterized by preparing an parallel fence

[Claim 2] The BTS according to claim 1 which is a BTS discharged to a delivery tray after receiving the form discharged from image formation equipment and performing after treatment if needed, and is characterized by protruding the above-mentioned fence along the back end edge of the above-mentioned delivery tray in what formed in the front end veranda at least the hollow for taking out the form of this delivery tray by which the stack was carried out.

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## DETAILED DESCRIPTION

## [Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the BTS equipped with the delivery tray constituted so that generating of the situation where this hollow serves as trouble for form ejection in the delivery tray which established the hollow for form ejection in the first transition of a delivery tray in detail could be effectively prevented about improvement of a delivery tray which performs classification of the form which was used for the BTS and discharged, a stack, etc.

[0002]

[Description of the Prior Art] The BTS (finisher) put side by side to image formation equipment is equipment which gives staple and punching by punch to the form [ finishing / record ] discharged from image formation equipment, or performs after treatment, such as \*\*\*\*\*, for this form. And on the delivery tray prepared in a BTS, it deposits in the state where the state where the form was loaded ordinarily, staple, punching, etc. were given, or the state where it was classified. For example, it is classification \*\*\*\*\* about each form bunch (section) by shifting an attitude, now the eccentric position of a form to the longitudinal direction which intersects a delivery tray perpendicularly with the eject direction of a form in a longitudinal direction, when carrying out classification eccentric of the form on a single delivery tray. By the way, in order to easy-ize the ejection work by the help of the form by which the stack was carried out on the delivery tray As shown in drawing 5 , there are some which established hollows 102 and 103 in the mid-position of the front end edge of the delivery tray 101 and a back end edge, respectively, and it sets on this delivery tray. By forming hollows 102 and 103, a hand is inserted using the space formed between the delivery tray 101 and the base of the form bunch P, and the device make a form bunch easy to take out from a near side or a posterior is made. However, when taking out a form bunch from on this type of delivery tray, the form bunch was accidentally extruded back like illustration, and the situation where snatching off of a form bunch becomes rather difficult, or the situation of dropping a form bunch from the back end edge of a delivery tray had occurred.

[0003]

[Problem(s) to be Solved by the Invention] The technical problem which this invention tends to solve is in the delivery tray which established the hollow for form ejection in the first transition of a delivery tray to offer the BTS equipped with the delivery tray constituted so that generating of the situation where this hollow serves as trouble for form ejection could be prevented effectively. A hand is specifically inserted into the hollow of a near side, and in case it is going to grasp and take out a form bunch, a form is accidentally stuffed into the back, and it carries out or aims at preventing generating of the situation of making it fall from the back end veranda of a delivery tray that it is hard to catch a form bunch etc.

[0004]

[Means for Solving the Problem] a form eject direction [ on the BTS discharged to a delivery tray after invention of a claim 1 receives the form discharged from image formation equipment and performing after treatment if needed, in order to attain the above-mentioned technical problem, and as opposed to the above-mentioned delivery tray ], and abbreviation -- the back end edge among the parallel delivery tray order edges -- meeting -- the form delivery direction and abbreviation -- it is characterized by preparing an parallel fence Invention of a claim 2 is a BTS discharged to a delivery tray, after receiving the form discharged from image formation equipment and performing after treatment if needed, and it is characterized by protruding the above-mentioned fence along the back end edge of the above-mentioned delivery tray in what formed in the front end veranda at least the hollow for taking out the form of this delivery tray by which the stack was carried out.

[0005]

[Embodiments of the Invention] Hereafter, the BTS of the example of 1 gestalt of this invention is explained in detail.

Drawing 1 is outline composition explanatory drawing of the BTS equipped with the delivery tray of the example of 1 gestalt of this invention, and the perspective diagram of the delivery tray section, drawing 3, and drawing 4 of drawing 2 are the perspective diagrams of a delivery tray simple substance. This BTS A has the 2nd path, the introductory path 1 which receives the form [ finishing / image formation ] discharged from the delivery mouth B-1 of image formation equipment B, and the three paths 3 which branch from the introductory path 1, i.e., 1st path which faces to the proof tray 2, 5 which faces to the delivery tray 4, and the 3rd path 7 which goes to the staple unit 6. The 1st branching presser foot stitch tongue 12 which the introductory roller 10 and the delivery sensor 11 are arranged at the introductory path 1, and is located in the tee of the trailer of the introductory path 1 is \*\*\*\*\* about the conveyance direction of a form to 1st path 3, other path 5, and 7 side by rotating. For the 1st path 3, the upper conveyance roller 15, the delivery sensor 16, and the delivery roller 17 are arranged, and the form led to the 1st path 3 by the branching presser foot stitch tongue 12 is conveyed and discharged on the proof tray 2. It is \*\*\*\*\* in either the 2nd path 5 or the 3rd path 7 about the conveyance direction of the form which the 2nd branching presser foot stitch tongue 20 has been arranged at the direct downstream of the 1st separation presser foot stitch tongue 12, and was not conveyed by the 1st path 3. For the 2nd path 5, it brings near, a roller 24 is arranged and the conveyance roller 21, the delivery sensor 22, the delivery roller 23, and the form that was not conveyed by the 3rd path 7 are discharged through the 2nd path 5 at the delivery tray 4. In addition, a sign 25 is a space lever and 26 is a space sensor. a space lever 25 is a means make the space sensor 26 detect the height position of a form by rotating in contact with the upper surface of the form on the delivery tray 4, and as shown also in drawing 2, the control section to which the height of a form rises with increase of the deposition number of sheets on an eccrisis tray and which is boiled, and is not followed and illustrated controls the driving means 27 which move the delivery tray 4 up and down, and drops a delivery tray the specified quantity every For this reason, the height of the form on a delivery tray is always held at fixed height.

[0006] The lower conveyance roller 30, the delivery sensor 31, and the brush roller 32 are arranged at the 3rd path 7, and the staple unit 6 is arranged in the termination position of the 3rd path 7. The staple unit 6 has the staple equipment 35 which moves in the direction which intersects perpendicularly with space, the staple tray 36, the jogger fence 37 which moves in the direction which intersects perpendicularly with space, and adjusts the form on the staple tray 36, the return roller 38, the discharge belt 39, presser-foot-stitch-tongue 39a, and discharge belt home sensor 40 grade. The form conveyed through the 3rd path 7 is discharged by the operation of brush roller 32 grade on the staple tray 36, and can arrange a crosswise position on the jogger fence 37. Moreover, the return roller 38 arranges the lengthwise position of a form bunch by performing pendulum movement and striking the form upper surface. Thus, the arranged form bunch is filed by staple equipment's 35 moving in the direction which intersects perpendicularly with space, and carrying out the staple of the proper place of the margo-inferior section of a form bunch. By making it run a belt 39 in the direction of the circumference of an anti-clock, where the margo-inferior section is supported by presser-foot-stitch-tongue 39a, the form bunch which received the staple moves up and is discharged on the delivery tray 4.

[0007] Next, other composition is equivalent although it differs from the delivery tray which drawing 3 is composition explanatory drawing of the delivery tray of the example of 1 gestalt of this invention, and was shown in drawing 2 at a point without notch 4a. The composition which protruded the fence 52 on the proper place of the back end edge of the delivery tray 4 has the characteristic composition of this delivery tray. In addition, hollows 50 and 51 are established in the front end side upper surface of the delivery tray 4, and the back end side upper surface, respectively, and easy-ization of the ejection of the form bunch on a tray is attained. By having formed the fence 52 along the back end edge of this delivery tray 4, it is lost that a fence 52 serves as an obstacle even if it is going to extrude the form bunch on a tray back accidentally, and cause a position gap back or a form bunch falls from a tray exceeding a fence 52. In addition, when the height of the form by which the stack was carried out on the delivery tray 4 becomes high like 30cm and 50cm and a weight also becomes heavy, the back hollow 51 is formed so that it may become possible to hold a form bunch and to take out from on a delivery tray with both hands. In addition, since the gap behind a form bunch and fall can be prevented by forming a fence 52 also to the delivery tray 4 which does not need to form the back hollow 51 and does not have the front hollow 50, the fence of this invention is applicable to all types of delivery tray. moreover -- although the fence 52 was formed only in the back hollow 51 bottom in the example of a gestalt of illustration -- under surface than a hollow 51 -- or you may prepare a fence in both positions Furthermore, a hollow 51 is omitted, a back end marginal overall length or a part is covered, and you may make it make a fence extend.

[0008] Moreover, although what dug deep and formed the hollow in the upper surface of the edge approach of the delivery tray which consists of a heavy-gage material in drawing 3 etc. was shown, this is an example, therefore may form the hollows 50 and 51 which it curved [ hollows ] and made sheet metal crooked in this part of the delivery tray which consists of sheet metal as shown in drawing 4. Although drawing 4 showed the example which both the hollows 50 and 51 were made to follow, it is not necessary to make it continue like drawing 3. Moreover, since there is no delivery tray what holds only the form to which after treatment, such as staple processing, was performed, a hollow and

a fence contribute effectively at the time of the ejection of the form discharged without receiving after treatment. It follows, for example, in case two or more form bunches by which classification eccrisis was carried out in piles on one delivery tray in the delivery mechanism equipped with classification \*\*\*\*\* for every section in the form discharged by moving a delivery tray to the longitudinal direction which intersects perpendicularly with a form eject direction are taken out, the fence of the delivery tray of this invention functions effectively as fall prevention and a pushing prevention means. Furthermore, as after-treatment equipment of this invention, although it had the staple function, equipment equipped with the after-treatment function of \*\*\*\*\*, such as punching by punch, is contained in others. Furthermore, the delivery tray of the above-mentioned example of a gestalt is applicable not only to the delivery tray of after-treatment equipment but the delivery tray of image formation equipments (a copying machine, a printer, facsimile, printer, etc.).

[0009]

[Effect of the Invention] According to this invention, in the delivery tray which established the hollow for form ejection in the first transition side of a delivery tray, the BTS equipped with the delivery tray constituted so that generating of the situation used as trouble with this hollow for [ trouble ] form ejection could be prevented effectively can be offered as mentioned above. A hand is inserted into the hollow of a near side, specifically, in case it is going to grasp and take out a form bunch, a form is accidentally stuffed into the back, it can carry out or generating of the situation of making it fall from the back end veranda of a delivery tray that it is hard to catch a form bunch etc. can be prevented. Namely, after invention of a claim 1 receives the form discharged from image formation equipment and performs after treatment if needed, it is set to the BTS discharged to a delivery tray. the form eject direction to the above-mentioned delivery tray, and abbreviation -- the back end edge among the parallel delivery tray order edges -- meeting -- the form delivery direction and abbreviation, since the parallel fence was prepared In case it is going to take out the form on a delivery tray from the front-face side of equipment regardless of the existence of a hollow, the configuration of a delivery tray, an arrangement part, etc., the form on a delivery tray can be pushed in back, or the ejection mistake of making it fall etc. can be prevented effectively. Moreover, you may apply the structure of such a tray to the delivery tray of not only after-treatment equipment but usual image formation equipment. Invention of a claim 2 is a BTS discharged to a delivery tray after receiving the form discharged from image formation equipment and performing after treatment if needed. In what formed in the front end veranda at least the hollow for taking out the form of this delivery tray by which the stack was carried out, since the above-mentioned fence was protruded along the back end edge of the above-mentioned delivery tray This fence contributes, when preventing the extrusion of a form which is the easiest to generate, and fall, in case it is going to take out a form using the dead air space between a hollow and the form undersurface.

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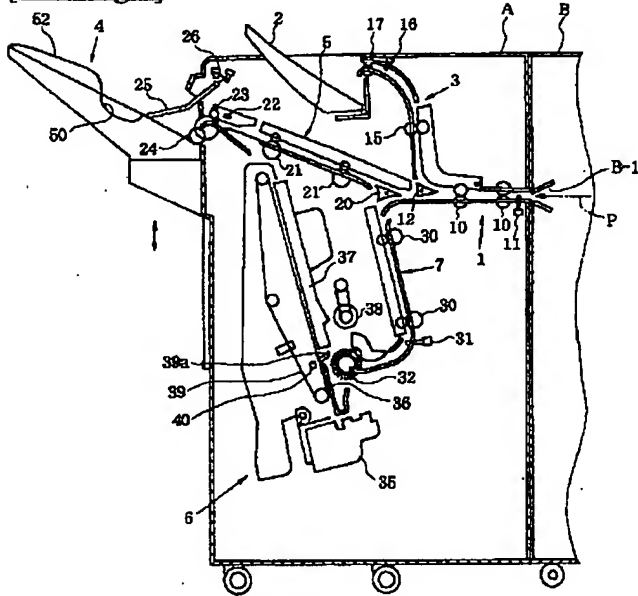
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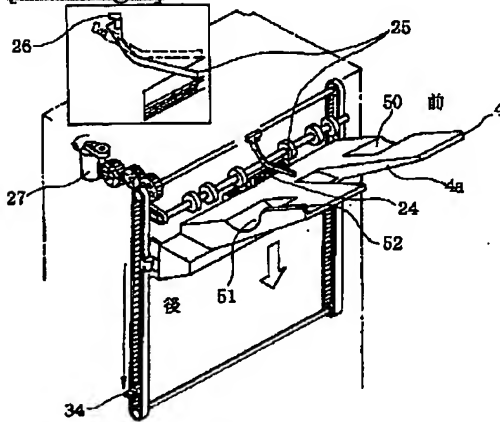
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## DRAWINGS

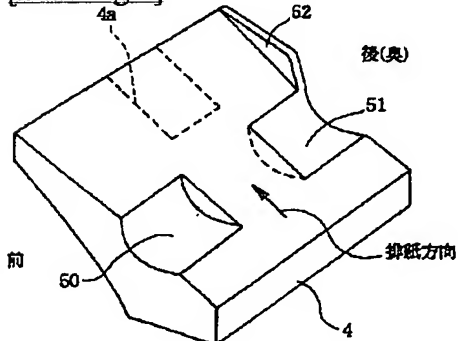
[Drawing 1]



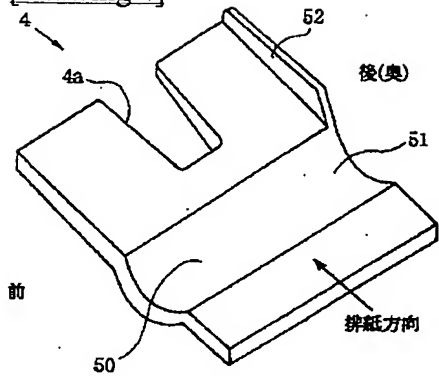
[Drawing 2]



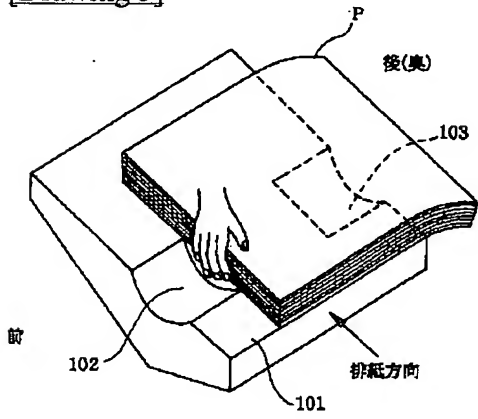
[Drawing 3]



[Drawing 4]



[Drawing 5]



[Translation done.]